

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS <small>OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30</small>				1. REQUISITION NUMBER PR-OAR-16-01202		PAGE OF 1 22	
2. CONTRACT NO. EP-W-16-015		3. AWARD EFFECTIVE DATE 0010		4. ORDER NUMBER		5. SOLICITATION NUMBER	
7. FOR SOLICITATION INFORMATION CALL:		4. NAME Robert Gray		b. TELEPHONE NUMBER (No collect calls) 202-564-1693		3. OFFER DUE DATE/LOCAL TIME ET	
9. ISSUED BY HPOD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460				10. THIS ACQUISITION IS <input checked="" type="checkbox"/> UNRESTRICTED OR <input type="checkbox"/> SET ASIDE <input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> WOMEN-OWNED SMALL BUSINESS <input type="checkbox"/> HUBZONE SMALL BUSINESS <input type="checkbox"/> (WOSB) ELIGIBLE UNDER THE WOMEN-OWNED SMALL BUSINESS PROGRAM <input type="checkbox"/> SERVICE-DISABLED VETERAN-OWNED SMALL BUSINESS <input type="checkbox"/> EDWOSB <input type="checkbox"/> 8(A)			
11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK 13 MARKED <input type="checkbox"/> SEE SCHEDULE				12. DISCOUNT TERMS		13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700) <input type="checkbox"/>	
13. DELIVER TO OAR/OAP US Environmental Protection Agency 1200 Pennsylvania Avenue NW Mail Code: 62101J OAR/OAP Washington DC 20460				13b. RATING 14. METHOD OF SOLICITATION <input type="checkbox"/> RFQ <input type="checkbox"/> IFB <input type="checkbox"/> RFP			
17a. CONTRACTOR OFFEROR AMEC FOSTER WHEELER ENVIRONMENT & INFRASTRUCTURE, INC. 751 ARBOR WAY, STE 180 BLUE BELL, PA 19422-1972				18a. PAYMENT WILL BE MADE BY RTP FMC RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham, NC 27711			
TELEPHONE NO. (b)(4)				17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER			
19. ITEM NO.				20. SCHEDULE OF SUPPLIES/SERVICES		21. QUANTITY	
						22. UNIT	
						23. UNIT PRICE	
						24. AMOUNT	
DUNS Number: 038086125 DUNS Number: 038086125 This task order is issued in accordance with the Task Order Ordering Procedures and hereby incorporates the base contract terms and conditions by reference. The effective date for performance to commence is July 20, 2016. The Contractor shall perform in accordance with the Attachment A Statement of Work (7 pages) and the accepted technical proposal and cost estimate (Use Reverse and/or Attach Additional Sheets as Necessary)							
25. ACCOUNTING AND APPROPRIATION DATA See Schedule						26. TOTAL AWARD AMOUNT (For Govt. Use Only) \$176,419.10	
<input type="checkbox"/> 27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4, FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED <input type="checkbox"/> 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4, FAR 52.212-5 IS ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED							
<input checked="" type="checkbox"/> 28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED.						<input type="checkbox"/> 29. AWARD OF CONTRACT _____ OFFER DATED _____ YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS.	
30a. SIGNATURE OF OFFERING CONTRACTOR 						31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER) 	
30b. NAME AND TITLE OF SIGNER (Type or print) Kemp Howell - Project Manager				30c. DATE SIGNED 7/20/16		31c. DATE SIGNED 7/20/16	

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	<p>(11 pages) dated July 13, 2016 in the amount of \$176,419.1.</p> <p>This is a Time-and-Materials (T&M) task order with a total ceiling price of \$176,419.1, which the Contractor is not authorized to exceed. The Contractor exceeds at its own risk.</p> <p>The total obligated/funded amount for this order is \$50,000. This order is hereby incrementally funded as detailed in Attachment B Summary of Amounts and Ceilings. Attachment B is hereby incorporated (1 page).</p> <p>Contracting Officer's Representative (COR) for this task order: Melissa Puchalski (202) 343-9882 puchalski.melissa@epa.gov</p> <p>Alternate COR: Ralph Baumgardner (919) 541-4625 Baumgardner.ralph@epa.gov</p> <p>The services of this order are for severable. TOCOR: Melissa Puchalski Continued ...</p>				

32a. QUANTITY IN COLUMN 21 HAS BEEN

☐ RECEIVED ☐ INSPECTED ☐ ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: _____

32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE		32c. DATE	32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE			32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
			32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
33. SHIP NUMBER	34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR	36. PAYMENT	37. CHECK NUMBER
<input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL			<input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	
38. S/R ACCOUNT NUMBER	39. S/R VOUCHER NUMBER	40. PAID BY		
41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT		42a. RECEIVED BY (<i>Print</i>)		
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER		41c. DATE	42b. RECEIVED AT (<i>Location</i>)	
			42c. DATE REC'D (YY/MM/DD)	42d. TOTAL CONTAINERS

CONTINUATION SHEET

REFERENCE NO. OF DOCUMENT BEING CONTINUED

EP-W-16-015/0010

PAGE OF

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22

NAME OF OFFEROR OR CONTRACTOR

AMEC ENVIRONMENT & INFRASTRUCTURE, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
0001	<p>Delivery: 06/30/2016 Period of Performance: 07/09/2016 to 07/08/2021</p> <p>CASTNET contract EPW16015 Task Order 10 NOx SOx Special Studies Melissa Puchalski #EP-W-16-015; TO:#0010 Supplemental Monitoring Studies at CASTNET Sites in Support of the NOx SOx Secondary Standard</p> <p>Accounting Info: 16-17-C-58D5-102A45-2505-1658DC6128-001 BFY: 16 EFY: 17 Fund: C Budget Org: 58D5 Program (PRC): 102A45 Budget (BOC): 2505 DCN - Line ID: 1658DC6128-001 Funding Flag: Partial Funded: \$50,000.00</p>				

Title: Supplemental Monitoring Studies at CASTNET Sites in Support of the NO_x/SO_x Secondary Standard
Contractor: Amec Foster Wheeler
Contract #: EP-W-16-015
Task Order #: 0010
Period of Performance: 7/9/2016 to 7/8/2017

EPA Key Personnel

Task Order Project Officer (TOPO)/Contract Level Project Officer (PO):

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email: Baumgardner.ralph@epa.gov

Contracting Officer (CO):

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Contracting Officer
Administrative Contract Service Center
1200 Pennsylvania Ave N.W.
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Washington DC 20460
phone: (202) 564-1698
email: gray.roberta@epa.gov

STATEMENT OF WORK

I. INTRODUCTION

The Clean Air Status and Trends Network (CASTNET) is a long-term environmental monitoring network that measures changes in ambient air quality and assesses atmospheric deposition over broad geographic regions of the U.S. (<https://www.epa.gov/castnet>). Operating since 1987, CASTNET has evolved into a robust regional monitoring program which currently consists of approximately 95 monitoring stations nationwide. The Environmental Protection Agency (EPA) coordinates the operation of the network in cooperation with numerous federal, tribal, state and local partners.

The primary monitoring objectives of CASTNET are to:

- Provide high quality data on atmospheric deposition, rural ground level ozone and other forms of atmospheric pollution;
- Support the primary and secondary ozone NAAQS and provide data on NAAQS compliance in rural areas;
- Monitor the status and trends in regional air quality and atmospheric deposition;
- Assess and report on geographic patterns and long-term, temporal trends in ambient air pollution and atmospheric deposition;
- Improve our understanding of PM and ozone formation;
- Validate and improve atmospheric models;
- Provide data for health-based research and epidemiology studies;
- Assess the effectiveness of EPA's emission reduction programs; and
- Support science and ecosystem studies.

CASTNET sites measure weekly average concentrations of sulfate (SO_4^{2-}), nitrate (NO_3^-), ammonium (NH_4^+), sulfur dioxide (SO_2), nitric acid (HNO_3), chloride (Cl^-) and the base cations (Na^+ , K^+ , Mg^{2+} and Ca^{2+}) using a 3-stage filter pack. In addition, each site may make ancillary measurements, including hourly ozone (O_3), hourly meteorology, ammonia (NH_3) gas using passive devices, and trace-level gases. Trace-level gas monitors include reactive oxidized nitrogen (NO_y), nitric oxide (NO), sulfur dioxide (SO_2) and carbon monoxide (CO). CASTNET O_3 , meteorological, and trace gas measurements follow the requirements in the Code of Federal Regulations (CFR) and EPA's Quality Assurance Handbook.

II. PURPOSE

The primary purpose of this task order is to improve the science and understanding of deposition process within the atmosphere. The EPA is currently evaluating the secondary National Ambient Air Quality Standard (NAAQS) for NO_x and SO_x . The work under this task will enhance the existing research currently available on direct deposition methods, atmospheric chemical processes that drive deposition parameters and estimates of sulfur and nitrogen loading to various landscapes. This research is a collaborative effort between EPA's Office of Air and Radiation (OAR), the Office of Research and Development (ORD), and other federal partners.

Under this task order the contractor will continue to operate the enhanced NO_y analyzer at the Beltsville, MD CASTNET site. This includes modifying the existing setup to include a Na_2CO_3 coated denuder to measure nitric acid (HNO_3).

Also under this task order, the contractor will develop a site characterization dataset for 3 co-located CASTNET/AMoN sites. The dataset will contain information about the soil and vegetation characteristics

within 1km of each AMoN site. A bi-direction flux box model will be run using the site characterization information as input to calculate NH_3 fluxes at each site. The three sites where measurements shall be made are Bondville, IL (BVL130), Coweeta, NC (COW137) and Chiricahua National Monument, AZ (CHA467). Amec FW shall develop SOPs and a full study plan prior to beginning field and/or laboratory analysis.

III. CONTRACT LEVEL STATEMENT OF WORK REFERENCE

The tasks to be performed under this task order are consistent with the activities authorized in CLIN 22 of the contract's Statement of Work.

IV. TECHNICAL DIRECTION

1. Prepare a Technical Proposal & Cost Estimate

The Contractor shall prepare a Task Order Proposal in accordance with the terms and conditions of contract clauses B.2 entitled Fixed Rates for Services – Indefinite delivery/Indefinite quantity contract.

2. Operate, Calibrate, and Quality Assure the Enhanced-NO_y Measurement System

The Contractor shall continue operating the enhanced-NO_y measurement system at the Beltsville, MD (BEL116) CASTNET site. This includes routine calibrations, remote troubleshooting, QA, and data reporting. The operation of the standard NO_y system is covered under CLIN 8 under Task Order 003 Base Operations.

Under this task the contractor shall also continue testing the converters for a configuration that provides the more reliable, accurate data as compared to the CASTNET filterpack, AMoN and MARGA system at Beltsville. This includes re-using the NO_x molybdenum oxide converter in-line with the TN_x stainless steel converter to capture all reactive nitrogen species. Further testing on the calibration system is also expected.

Finally, the contractor will begin testing the system with a Na_2CO_3 denuder at the Gainesville laboratory to measure HNO_3 by difference. Once the data has been reviewed by EPA, EPA may provide technical direction to install the denuders at the BEL116 site on the enhanced-NO_y system.

3. Ammonia Flux Site Characterization Database

The contractor shall work with the TOPO to develop a study plan for characterizing 3 NADP AMoN sites co-located with CASTNET. The three selected based on ambient concentrations, land use types, vegetation, and site access are BVL130, IL, COW137, NC and CHA467, AZ. The contractor shall develop a database that can be used for modeling the bi-directional flux of NH_3 .

The contractor shall install a sonic anemometer at each site. At CHA467, the contractor shall also install a Campbell data logger for remote polling. The anemometers and data loggers were purchased under Task 007 on EP-W-15-003. The contractor shall also install any meteorological sensors that don't currently exist at CHA467 (2-m temperature probe, and a wetness sensor). Soil temperature and moisture shall be measured at each site using a temperature probe and a soil H₂O content reflectometer. Both the soil temperature and moisture sensors should be controlled by the Campbell data logger.

Database development:

Soil and vegetation samples will be collected and/or measured within 1-km of each pilot CASTNET/AMoN site (BVL130, COW137, and CHA467). The location of samples will be based on the soil and vegetation types,

existing on-going or historical measurements, and site access. We will use the current soil (NRCS) and vegetation maps to identify groupings and measurement locations. Additionally, meteorological measurements will be added where necessary. Meteorological measurements will be made following the CASTNET QAPP, with the addition of 3D wind speed and temperature using a sonic anemometer and reported hourly. Task Order 3, Base Program, will be updated to include units for the meteorological measurements.

Table 1 lists the measurements that will be required within 1-km of the site. Before measurement sites are identified, the dominate soil and vegetation types should be identified and quantified. EPA can provide NRCS soil maps and vegetation maps with types identified.

Approximately 30 composite soil samples will be collected and analyzed seasonally for each of the three pilot sites (BVL130, COW137 and CHA467). Individual soil sampling locations will be selected in collaboration with EPA based on maps of the dominant soil types at each site. At each of 15 locations, 5 soil cores will be collected at random within a 1X1 m plot. The sample will be deep enough to capture both the O and A soil horizons. Individual cores will be separated into O and A horizons and the 5 replicate samples will be composited by horizon and measurement location, generating a total of 15 O-horizon samples and 15 A-horizon samples (30 total samples) per pilot site. Soils will be immediately stored under refrigeration and extracted within 72 hours. Samples will be analyzed for extractable NH_4^+ and pH. For NH_4^+ analysis, 5 g of field moist soil will be extracted in 20g of 0.01M CaCl_2 following standard protocols. Samples will be analyzed by ion chromatography or colorimetry. pH will be determined directly on a 1:5 fresh soil/water slurry. Soil Gravimetric moisture will be determined by weight loss after heating 25 g of soil for 24 hours at 105 °C.

Leaf litter on the soil surface will be collected in the same locations as soil samples during each season, generating a total of 15 samples each season per pilot site. Approximately 50 g of leaf litter will be collected within the corresponding 1X1m soil sampling location. Green leaves will be sampled seasonally from three to five individual trees representing the dominant species. Tree locations will coincide with soil/litter sampling locations where possible. For each tree, approximately 25g of leaves will be sampled from the upper and lower canopy, respectively, using the slingshot method. Litter and leaf samples will be immediately stored under refrigeration. Bulk green leaf and litter samples will be subsampled for analysis of moisture, total N, and NH_4^+ . For NH_4^+ analysis, fresh material will be ground in liquid nitrogen and 5 grams of material will be extracted in 20 mL of deionized water. Extractions will take place within 72 hours of collection. Extracts will be analyzed for NH_4^+ using ion chromatography or colorimetry. For total N analysis, material will be dried, ground, and analyzed for total N via combustion/elemental analysis. Moisture content will be determined by weight loss after drying at 60°C to a constant weight.

Leaf area index will be measured seasonally at approximately 15 locations, timed in the summer and winter to capture maximum and minimum LAI, using an LAI 2000 plant canopy analyzer. Locations will correspond with soil sampling locations if possible.

In addition to standard CASTNET meteorology, BVL130 and CHA467 will be equipped with a sonic anemometer and sensors for soil moisture and temperature. Sonic anemometer measurements of 3D wind (u, v, w) and temperature will be recorded at 10 Hz.

Green: EPA will provide; Blue: Amec will provide

Measurement Frequency	Measurement	Time period	Notes	BVL130	COW137	CHA467
<i>Initial Measurement (or 1-time measurement)</i>	<i>Canopy Height</i>	<i>Dominate species at start and end of study</i>	<i>LIDAR</i>	<i>LIDAR data exists, but we need to take measurements of crop canopy height</i>	<i>Existing</i>	<i>Needed</i>
	<i>Vegetation characterization – species type, percentage of each species</i>	<i>Peak leaf out?</i>	<i>NLCD database?</i>	<i>Needed</i>	<i>Needed</i>	<i>Needed</i>
	<i>Vegetation species density – stems per m² or ha</i>	<i>Peak leaf out</i>	<i>LIDAR measurements</i>	<i>Needed</i>	<i>Needed</i>	<i>Needed</i>
	<i>Surface albedo</i>	<i>Initial</i>	<i>Remote sensing data</i>	<i>Existing</i>	<i>Existing</i>	<i>Existing</i>
	<i>Hydrological group</i>	<i>Initial</i>	<i>NRCS WSS</i>	<i>Existing</i>	<i>Existing</i>	<i>Existing</i>
	<i>Quality Rating</i>	<i>Initial</i>	<i>NRCS WSS</i>	<i>Existing</i>	<i>Existing</i>	<i>Existing</i>
	<i>Soil Type – type, percentage of each species</i>	<i>Initial</i>	<i>NRCS WSS</i>	<i>Existing</i>	<i>Existing</i>	<i>Existing</i>
	<i>Soil Characteristics – bulk density, sand/silt/clay, wilt point, field capacity, depth to impervious layer, rooting depth</i>	<i>Initial</i>	<i>NRCS WSS</i>	<i>Existing</i>	<i>Existing</i>	<i>Existing</i>
	<i>Age of Plot</i>	<i>Initial</i>	<i>Ag – how many years has plot been cultivated, forest – when was stand last cleared?</i>	<i>Existing</i>	<i>Existing</i>	<i>?</i>
	<i>Overall slope of site</i>		<i>LIDAR measurements ?</i>	<i>Existing</i>	<i>Existing</i>	<i>Needed</i>
<i>Seasonal</i>	<i>LAI Profiles</i>	<i>Coincide with soil/litter sampling. Measurements at leaf out, peak LAI, senescence,</i>	<i>Li-COR LAI 2200C</i>	<i>Take measurement at 10 locations</i>	<i>Take measurements at 10 locations</i>	<i>Take measurements at 10 locations</i>

		<i>and minimum LAI</i>				
	<i>Bulk leaf tissue [N] and [NH₄⁺]</i>	<i>At peak LAI</i>	<i>Dominate species</i>	<i>Take measurements at 10 sites</i>	<i>Take measurements at 10 sites</i>	<i>Take measurements at 10 sites</i>
	<i>Litter – depth, composition, total [N] and [NH₄⁺]</i>	<i>After leaf drop</i>	<i>Dominate species at soil measurement sites. Same analysis as bulk leaf tissue.</i>	<i>Take measurements at 10 sites</i>	<i>Take measurements at 10 sites</i>	<i>Take measurements at 10 sites</i>
	<i>Soil chemistry (pH, [NH₄⁺], and [NO₃⁻])</i>	<i>Coincide with vegetation samples</i>	<i>Top two horizons – typically the O (organic) and A (topsoil) horizons for dominate soils/vegetation locations.</i>	<i>Take measurements at 10 sites</i>	<i>Take measurements at 10 sites</i>	<i>Take measurements at 10 sites</i>
<i>Hourly</i>	<i>Soil characteristics (moisture, temperature)</i>	<i>Hourly measurements at 1 location (2 horizons?)</i>	<i>Locations depend on soil types, vegetation and site slope Temperature probe Campbell Scientific 107 Soil moisture Campbell scientific Soil H₂O content reflectometer CS650</i>	<i>Take measurements</i>	<i>Take measurements</i>	<i>Take measurements</i>
	<i>Meteorology</i>		<i>Standard suite of CASTNET measurements.</i>	<i>Take measurements</i>	<i>Take measurements</i>	<i>Take measurements</i>

The contractor shall include a technical proposal and cost estimate for the measurements listed below.

The contractor will develop and store all measured data in an Oracle database. Results will be transferred to the EPA database 90 days after measurements are analyzed or recorded.

EPA will provide data from the USDA WSS database for each site where data is available. The contractor will not be required to manage the data provided by EPA.

4. Whiteface Summit Filter Pack

The contractor shall install a filter pack system (including a data logger, pump, flow system) on the roof of the Whiteface research lab at the summit. The filter pack flow system will be automatically switched off when moisture is high (clouds). The installation (equipment, travel, etc.) will be included in this task order. The filter pack analysis, QA and calibrations will be included under Task Order 3 Base Operations.

V. DELIVERABLES AND SCHEDULE

1. Proposal

The contractor shall deliver a Task Order Proposal in accordance with clause B.7 Task Order Ordering Procedures of the contract. The proposal shall be submitted 10 days after receipt of the SOW.

2. Monthly Progress Report

The contractor shall prepare and submit a monthly progress report by the 15th of each month summarizing the progress made, issues encountered or expected, work planned for the next reporting period and costs. These reports shall comply with contract clauses F.3 Reports of Work and F.5 Monthly Progress Report. Reports shall be delivered electronically.

3. Database

The contractor shall deliver a database with valid data and all QA/QC data reported during the field campaign. The database shall be delivered 90 days after the final measurement is taken.

4. Study Plan & SOPs for Site Characterization Study

The contractor shall prepare and submit a formal study plan including measurement and analysis SOPs for the soil and vegetation characterization study by August 30th 2016.

5. Publication

Within 6-months after the final sample is collected, the contractor shall work with the TOPOs and technical advisors to prepare an EPA summary report.

Distribution of Deliverables:

Addressee	Copies
EPA Contracting Officer (Rob Gray)	1
EPA Project Officer (Melissa Puchalski)	1
EPA Alternate (Ralph Baumgardner)	1
EPA Technical Advisor (John T Walker)	1

ATTACHMENT B
SUMMARY OF AMOUNTS AND CEILINGS

Total Funding/Obligation Amount			
Period	This Action		Amount
Base Period	\$50,000		\$50,000
Total	\$50,000		\$50,000

Total Task Order Ceiling			
Period	This Action		Amount
Base Period	\$176,419.10		\$176,419.10
Total	\$176,419.10		\$176,419.10

NOTE: This task order is hereby incrementally funded. The Contractor exceeds funding at its own risk.

This task order requires \$126,419.1 to be fully funded.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES	
						1 3	
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
001		See Block 16C		PR-OAR-17-00075		EP-W-16-015	
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
HPOD							
US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(x)			
AMEC ENVIRONMENT & INFRASTRUCTURE, INC. Attn: LISA DWYER AMEC FOSTER WHEELER ENVIRONMENT & I 751 ARBOR WAY, STE 180 (b)(4) BLUE BELL PA 194221960							
9A. AMENDMENT OF SOLICITATION NO.							
9B. DATED (SEE ITEM 11)							
10A. MODIFICATION OF CONTRACT/ORDER NO.				x			
EP-W-16-015				0010			
10B. DATED (SEE ITEM 13)				07/20/2016			
CODE 038086125		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)				Net Increase:		\$50,000.00	
See Schedule							
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
X	D. OTHER (Specify type of modification and authority) Funding Action Only						
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not. <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 038086125							
The purpose of this modification is to obligate incremental funding in the amount of \$50,000.00.							
Contracting Officer: Michael Fox, (202)564-2550, Fox.Michael@epa.gov							
Contracting Officer's Representative (COR): Melissa Puchalski, (202) 343-9882, Puchalski.Melissa@epa.gov TOCOR: Melissa Puchalski							
Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Anthony Terrell			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
(Signature of person authorized to sign)				 (Signature of Contracting Officer)		ELECTRONIC SIGNATURE 11/17/2016	

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/0010/001	2	3

NAME OF OFFEROR OR CONTRACTOR
AMEC ENVIRONMENT & INFRASTRUCTURE, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>LIST OF CHANGES:</p> <p>Reason for Modification : Funding Only Action</p> <p>Obligated Amount for this Modification: \$50,000.00</p> <p>New Total Obligated Amount for this Award: \$100,000.00</p> <p>Incremental Funded Amount changed: from \$50,000.00 to \$100,000.00</p> <p>Buyer changed</p> <p>from Robert A Gray</p> <p>to Michael C Fox</p> <p>Contracting Officer changed</p> <p>from Robert A Gray</p> <p>to Anthony Terrell</p> <p>CHANGES FOR LINE ITEM NUMBER: 1</p> <p>Obligated Amount for this modification: \$50,000.00</p> <p>Incremental Funded Amount changed from \$50,000.00 to \$100,000.00</p> <p>NEW ACCOUNTING CODE ADDED:</p> <p>Account code:</p> <p>17-18-C-58D5-102A45-2505-1758DC7005-001</p> <p>Beginning FiscalYear 17</p> <p>Ending Fiscal Year 18</p> <p>Fund (Appropriation) C</p> <p>Budget Organization 58D5</p> <p>Program (PRC) 102A45</p> <p>Budget (BOC) 2505</p> <p>Job # (Site/Project)</p> <p>Cost Organization</p> <p>DCN-LineID 1758DC7005-001</p> <p>Quantity: 0</p> <p>Amount: \$50,000.00</p> <p>Percent: 28.3416</p> <p>Subject To Funding: N</p> <p>Payment Address:</p> <p>RTP Finance Center</p> <p>US Environmental Protection Agency</p> <p>RTP-Finance Center (AA216-01)</p> <p>109 TW Alexander Drive</p> <p>www2.epa.gov/financial/contracts</p> <p>Durham NC 27711</p> <p>Continued ...</p>				

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/0010/001	3	3

NAME OF OFFEROR OR CONTRACTOR

AMEC ENVIRONMENT & INFRASTRUCTURE, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711 FOB: Destination Period of Performance: 07/20/2016 to 07/08/2021				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. 002		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO. PR-OAR-17-00261	
5. PROJECT NO. (If applicable)		6. ISSUED BY HPOD		7. ADMINISTERED BY (If other than Item 6) CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) AMEC ENVIRONMENT & INFRASTRUCTURE, INC. Attn: LISA DWYER AMEC FOSTER WHEELER ENVIRONMENT & I 751 ARBOR WAY, STE 180 (b)(4) BLUE BELL PA 194221960		(x) 9A. AMENDMENT OF SOLICITATION NO.		9B. DATED (SEE ITEM 11)	
CODE 038086125		FACILITY CODE		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-W-16-015 0010 10B. DATED (SEE ITEM 13) 07/20/2016	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers. ☐ Is extended. ☐ Is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)
See Schedule
Net Increase: \$11,658.94

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO. (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF FAR 52.243-1 - Changes--Fixed Price
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ Is not ☒ Is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: 038086125

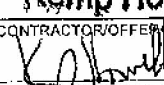
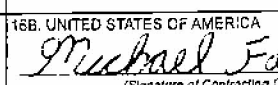
The purpose of this modification is to:

- 1.) Revise the statement of work in accordance with Attachment A, Revised Statement of Work (8 pages) and the revised technical and cost proposal dated January 27, 2017 (13 pages).
- 2.) Correct the period of performance end date from July 8, 2021 to July 8, 2017.
- 3.) Obligate incremental funding in the amount of \$11,658.94.

LIST OF CHANGES:

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 8 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) Kemp Howell - Project Manager		15A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Michael C. Fox	
15B. CONTRACTOR/OFFEROR 	15C. DATE SIGNED 11/31/17	15B. UNITED STATES OF AMERICA 	15C. DATE SIGNED 01/31/2017

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED EP-W-16-015/0018/002	PAGE 2	OF 2
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NAME OF OFFEROR OR CONTRACTOR
AMEC ENVIRONMENT & INFRASTRUCTURE, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Reason for Modification : Supplemental Agreement for work within scope</p> <p>Period Of Performance End Date changed from 08-JUL-21 to 08-JUL-17</p> <p>Obligated Amount for this Modification: \$11,658.94</p> <p>New Total Obligated Amount for this Award: \$111,658.94</p> <p>Incremental Funded Amount changed: from \$100,000.00 to \$111,658.94</p> <p>NEW ACCOUNTING CODE ADDED:</p> <p>Account code:</p> <p>16-17-C-58D5-102A45-2505-1758DC7014-001</p> <p>Beginning Fiscal Year 16</p> <p>Ending Fiscal Year 17</p> <p>Fund (Appropriation) C</p> <p>Budget Organization 58D5</p> <p>Program (PRC) 102A45</p> <p>Budget (BOC) 2505</p> <p>Job # (Site/Project)</p> <p>Cost Organization</p> <p>DCN-LineID 1758DC7014-001</p> <p>Quantity: 0</p> <p>Amount: \$11,658.94</p> <p>Percent: 6.60866</p> <p>Subject To Funding: N</p> <p>Payment Address:</p> <p>RTP Finance Center</p> <p>US Environmental Protection Agency</p> <p>RTP-Finance Center (AA216-01)</p> <p>109 TW Alexander Drive</p> <p>www2.epa.gov/financial/contracts</p> <p>Durham NC 27711</p> <p>Payment:</p> <p>RTP Finance Center</p> <p>US Environmental Protection Agency</p> <p>RTP-Finance Center (AA216-01)</p> <p>109 TW Alexander Drive</p> <p>www2.epa.gov/financial/contracts</p> <p>Durham NC 27711</p> <p>FOB: Destination</p> <p>Period of Performance: 07/20/2016 to 07/03/2017</p>				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE OF PAGES	
				13	
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.	
003		See Block 16C		PR-OAR-17-00656	
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)	
HPOD				CODE	
US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460					
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)		(X)		9A. AMENDMENT OF SOLICITATION NO.	
AMEC ENVIRONMENT & INFRASTRUCTURE, INC. Attn: LISA DWYER AMEC FOSTER WHEELER ENVIRONMENT & I 751 ARBOR WAY, STE 180 (b)(4)				9B. DATED (SEE ITEM 11)	
		X		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-W-16-015 0010	
				10B. DATED (SEE ITEM 13) 07/20/2016	
CODE 038086125		FACILITY CODE			
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS					
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
12. ACCOUNTING AND APPROPRIATION DATA (If required)					
See Schedule					
Net Increase: \$30,000.00					
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
CHECK ONE					
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.					
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).					
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:					
D. OTHER (Specify type of modification and authority)					
X FAR 52.232-22 - Limitation of Funds					
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not. <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.					
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)					
The purpose of this modification is to:					
1.) Obligate incremental funding in the amount of \$30,000.00 to this task order.					
2.) Correct the task order ceiling amount. The ceiling amount is being increased by \$63,990.90 from \$176,419.10 to \$240,410.00. The ceiling amount should have been increased with the previous modification (0002), which revised the SOW and approved the contractors revised proposal dated January 27, 2017.					
LIST OF CHANGES:					
Reason for Modification : Funding Only Action					
Continued ...					
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.					
15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
		Michael C. Fox			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA	
(Signature of person authorized to sign)				ELECTRONIC SIGNATURE	
				05/31/2017	
				(Signature of Contracting Officer)	
NSN 7540-01-152-8070					
Previous edition unusable					
STANDARD FORM 30 (REV. 10-83)					
Prescribed by GSA					
FAR (48 CFR) 53.243					

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
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NAME OF OFFEROR OR CONTRACTOR

AMEC ENVIRONMENT & INFRASTRUCTURE, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Total Amount for this Modification: \$63,990.90</p> <p>New Total Amount for this Version: \$240,410.00</p> <p>New Total Amount for this Award: \$240,410.00</p> <p>Obligated Amount for this Modification: \$30,000.00</p> <p>New Total Obligated Amount for this Award:</p> <p>\$141,658.94</p> <p>Incremental Funded Amount changed: from</p> <p>\$111,658.94 to \$141,658.94</p> <p>CHANGES FOR LINE ITEM NUMBER: 1</p> <p>Total Amount changed</p> <p>from \$176,419.10 to \$240,410.00</p> <p>Obligated Amount for this modification: \$30,000.00</p> <p>Incremental Funded Amount changed from</p> <p>\$111,658.94 to \$141,658.94</p> <p>CHANGES FOR DELIVERY LOCATION: OAR/OAP</p> <p>Amount changed from \$176,419.10 to \$240,410.00</p> <p>NEW ACCOUNTING CODE ADDED:</p> <p>Account code:</p> <p>17-18-C-58D5-102A45-2505-1758DC7042-001</p> <p>Beginning FiscalYear 17</p> <p>Ending Fiscal Year 18</p> <p>Fund (Appropriation) C</p> <p>Budget Organization 58D5</p> <p>Program (PRC) 102A45</p> <p>Budget (BOC) 2505</p> <p>Job # (Site/Project)</p> <p>Cost Organization</p> <p>DCN-LineID 1758DC7042-001</p> <p>Quantity: 0</p> <p>Amount: \$30,000.00</p> <p>Percent: 17.00496</p> <p>Subject To Funding: N</p> <p>Payment Address:</p> <p>RTP Finance Center</p> <p>US Environmental Protection Agency</p> <p>RTP-Finance Center (AA216-01)</p> <p>109 TW Alexander Drive</p> <p>www2.epa.gov/financial/contracts</p> <p>Durham NC 27711</p> <p>Continued ...</p>				

NAME OF OFFEROR OR CONTRACTOR
 AMEC ENVIRONMENT & INFRASTRUCTURE, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711 FOB: Destination Period of Performance: 07/20/2016 to 07/08/2017				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. P00004		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO.	
5. PROJECT NO. (If applicable)		6. ISSUED BY HPOD		7. ADMINISTERED BY (If other than Item 6)	
HPOD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460		8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) AMEC ENVIRONMENT & INFRASTRUCTURE, INC. Attn: LISA DWYER AMEC FOSTER WHEELER ENVIRONMENT & I 751 ARBOR WAY, STE 180 (b)(4) BLUE BELL PA 194221960		9A. AMENDMENT OF SOLICITATION NO. 9B. DATED (SEE ITEM 11) 10A. MODIFICATION OF CONTRACT/ORDER NO. EP-W-16-015 0010 10B. DATED (SEE ITEM 13) 07/20/2016	
CODE 038086125		FACILITY CODE			

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Decrease: -\$56,313.44
See Schedule

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) FAR 52.232-22 - Limitation of Funds

E. IMPORTANT: Contractor ☒ is not. ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to de-obligate funding in the amount of \$56,313.14 from this task order.

LIST OF CHANGES:

Reason for Modification : Funding Only Action
Obligated Amount for this Modification: -\$56,313.44
New Total Obligated Amount for this Award: \$85,345.50
Incremental Funded Amount changed: from
\$141,658.94 to \$85,345.50
CHANGES FOR LINE ITEM NUMBER: 1
Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Michael C. Fox	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA (Signature of Contracting Officer)	16C. DATE SIGNED 11/03/2017

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED EP-W-16-015/0010/P00004	PAGE	OF
		2	2

NAME OF OFFEROR OR CONTRACTOR

AMEC ENVIRONMENT & INFRASTRUCTURE, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Obligated Amount for this modification: -\$56,313.44 Incremental Funded Amount changed from \$141,658.94 to \$85,345.50</p> <p>CHANGES FOR ACCOUNTING CODE: 17-18-C-58D5-102A45-2505-1758DC7005-001 Amount changed from \$50,000.00 to \$23,686.56</p> <p>CHANGES FOR ACCOUNTING CODE: 17-18-C-58D5-102A45-2505-1758DC7042-001 Amount changed from \$30,000.00 to \$0.00</p> <p>Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>FOB: Destination Period of Performance: 07/20/2016 to 07/08/2017</p>				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. P000005		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO.	
5. PROJECT NO. (If applicable) EP-W-16-015		6. ISSUED BY CODE HPOD		7. ADMINISTERED BY (If other than Item 6) CODE	
HPOD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460		8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972		9A. AMENDMENT OF SOLICITATION NO. 9B. DATED (SEE ITEM 11) 10A. MODIFICATION OF CONTRACT/ORDER NO. EP-W-16-015 1001 10B. DATED (SEE ITEM 13) 06/22/2017	
CODE 038086125		FACILITY CODE			

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Decrease: -\$19,509.34
See Schedule

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) FAR 52.232-22 Limitation of Funds

E. IMPORTANT: Contractor ☒ is not. ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: 038086125

The purpose of this modification is to de-obligate funding in the amount of \$19,509.34 from this task order.

TOCOR: Macy Taylor

LIST OF CHANGES:

Reason for Modification: Funding Only Action

Obligated Amount for this Modification: -\$19,509.34

New Total Obligated Amount for this Award: \$250,519.66

Incremental Funded Amount changed: from

\$270,029.00 to \$250,519.66

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Michael C. Fox	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA ELECTRONIC SIGNATURE (Signature of Contracting Officer)	16C. DATE SIGNED 11/01/2018

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/1001/P00005	2	2

NAME OF OFFEROR OR CONTRACTOR

WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>CHANGES FOR LINE ITEM NUMBER: 1</p> <p>Obligated Amount for this Modification: -\$19,509.34</p> <p>Incremental Funded Amount changed from \$270,029.00 to \$250,519.66</p> <p>CHANGES FOR ACCOUNTING CODE: 18-19-C-58D5-000A45-2505-1858DC8037-001 Amount changed from \$74,543.88 to \$55,034.54</p> <p>Payment:</p> <p>RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Period of Performance: 07/09/2017 to 07/08/2018</p>				

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS <i>OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30</i>				1. REQUISITION NUMBER PR-OAR-17-00082		PAGE OF 1 7						
2. CONTRACT NO. EP-W-16-015			3. AWARD EFFECTIVE DATE 12/20/2016		4. ORDER NUMBER 0011		5. SOLICITATION NUMBER					
7. FOR SOLICITATION INFORMATION CALL:			a. NAME Michael Fox			b. TELEPHONE NUMBER (No collect calls) 202-564-2550		8. SOLICITATION ISSUE DATE ET				
9. ISSUED BY HPOD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460				10. THIS ACQUISITION IS <input checked="" type="checkbox"/> UNRESTRICTED OR <input type="checkbox"/> SET ASIDE: % FOR: <input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> WOMEN-OWNED SMALL BUSINESS <input type="checkbox"/> HUBZONE SMALL BUSINESS <input type="checkbox"/> (WOSB) ELIGIBLE UNDER THE WOMEN-OWNED SMALL BUSINESS PROGRAM NAICS: 541620 <input type="checkbox"/> SERVICE-DISABLED VETERAN-OWNED SMALL BUSINESS <input type="checkbox"/> EDWOSB <input type="checkbox"/> 8(A) SIZE STANDARD: \$15.0								
11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED <input type="checkbox"/> SEE SCHEDULE		12. DISCOUNT TERMS		13a. THIS CONTRACT IS A RATED ORDER UNDER OPAS (15 CFR 700)		13b. RATING						
15. DELIVER TO OAR/OAQPS/CORE US Environmental Protection Agency Mail Code: C404-02 109 TW Alexander Drive Durham NC 27711				16. ADMINISTERED BY HPOD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460								
17a. CONTRACTOR/OFFEROR AMEC ENVIRONMENT & INFRASTRUCTURE, INC. Attn: LISA DWYER AMEC FOSTER WHEELER ENVIRONMENT & I 751 ARBOR WAY, STE 180 BLUE BELL PA 194221960		18a. PAYMENT WILL BE MADE BY RTP FMC RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711		19. CONTRACTOR/OFFEROR CODE 038086125								
TELEPHONE NO. (b)(4)				17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER								
18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK BELOW IS CHECKED <input type="checkbox"/> SEE ADDENDUM												
19. ITEM NO.		20. SCHEDULE OF SUPPLIES/SERVICES			21. QUANTITY		22. UNIT		23. UNIT PRICE		24. AMOUNT	
		DUNS Number: 038086125 This task order is issued in accordance with the Task Order Ordering Procedures and hereby incorporates the base contract terms and conditions by reference. The effective date for performance to commence is December 20, 2016. The Contractor shall perform in accordance with the Attachment A Statement of Work (4 pages) and the accepted technical proposal and cost estimate (6 pages) dated December 5, 2016 in the amount of <i>(Use Reverse and/or Attach Additional Sheets as Necessary)</i>										
25. ACCOUNTING AND APPROPRIATION DATA See Schedule								26. TOTAL AWARD AMOUNT (For Govt. Use Only) \$7,953.00				
<input type="checkbox"/> 27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4, FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED. <input type="checkbox"/> 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4, FAR 52.212-5 IS ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED.								<input type="checkbox"/> 28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED.				
<input type="checkbox"/> 28. AWARD OF CONTRACT: DATED _____ YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS:								<input type="checkbox"/> 28. AWARD OF CONTRACT: DATED _____ YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS:				
30a. SIGNATURE OF OFFEROR/CONTRACTOR Kemp Howell - Project Manager				31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER) 								
30b. NAME AND TITLE OF SIGNER (Type or print) Kemp Howell				30c. DATE SIGNED 12/19/16				31b. NAME OF CONTRACTING OFFICER (Type or print) Michael C. Fox				
								31c. DATE SIGNED 12/19/2016				

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	<p>\$7,953.00.</p> <p>This is a Time-and-Materials (T&M) task order with a total ceiling price of \$7,953.00, which the Contractor is not authorized to exceed. The Contractor exceeds at its own risk.</p> <p>Contracting Officer: Michael Fox, (202)564-2550, Fox.Michael@epa.gov</p> <p>Contracting Officer's Representative (COR) for this task order: Melissa Puchalski, (202) 343-9882, puchalski.melissa@epa.gov</p> <p>Alternate COR: Mark Evangelista, (919) 541-2803, Evangelista.Mark@epa.gov</p> <p>TOCOR: MRURY02</p> <p>Period of Performance: 12/20/2016 to 07/08/2017</p>				
0001	<p>Prepare U.S./Canada Progress Report</p> <p>Award Type: Time-and-materials</p> <p>Accounting Info: 16-17-B-53G3-101A46-2505-1753GP7002-001 BFY: 16 EFY: 17 Fund: B Budget Org: 53G3 Program (PRC): 101A46 Budget (BOC): 2505 DCN - Line ID: 1753GP7002-001 Continued ...</p>				7,953.00

32a. QUANTITY IN COLUMN 21 HAS BEEN

☐ RECEIVED ☐ INSPECTED ☐ ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: _____

32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE		32c. DATE	32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE			32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
			32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
33. SHIP NUMBER	34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR	36. PAYMENT	37. CHECK NUMBER
<input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL			<input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	
38. S/R ACCOUNT NUMBER	39. S/R VOUCHER NUMBER	40. PAID BY		
41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT		42a. RECEIVED BY (Print)		
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER		42b. RECEIVED AT (Location)		
		42c. DATE REC'D (YY/MM/DD)		42d. TOTAL CONTAINERS

Title: Prepare US/Canada Progress Report
Contractor: Amec Foster Wheeler
Contract #: EP-W-16-015
Task Order #: 011
Period of Performance: 12/20/2016 to 07/08/2017

EPA Key Personnel

Task Order Project Officer (TOPO)/Contract Level Project Officer (PO):

Melissa Puchalski
Clean Air Markets Division (OAP/OAR/CAMD)
1200 Pennsylvania Ave., NW
Mail Code 6204M
Washington, DC 20460
phone: (202) 343-9882
email: Puchalski.Melissa@epa.gov

Alternate TOPO:

Mark Evangelista
Air Quality Assessment Division (OAR/OAQPS/AQAD)
Mail Drop C304-04
Research Triangle Park, NC 27711
Phone: (919) 541-2803
Email: Evangelista.Mark@epa.gov

Contracting Officer (CO):

Mike Fox
Contracting Officer
Administrative Contract Service Center
1200 Pennsylvania Ave N.W.
Mail Code 3803R
Washington DC 20460
phone: (202) 564-2550
email: Fox.Michael@epa.gov

STATEMENT OF WORK

I. INTRODUCTION

The Clean Air Status and Trends Network (CASTNET) is a long-term environmental monitoring network that measures changes in ambient air quality and assesses atmospheric deposition over broad geographic regions of the U.S. (<https://www.epa.gov/castnet>). Operating since 1987, CASTNET has evolved into a robust regional monitoring program which currently consists of approximately 95 monitoring stations nationwide. The Environmental Protection Agency (EPA) coordinates the operation of the network in cooperation with numerous federal, tribal, state and local partners.

The primary monitoring objectives of CASTNET are to:

- Provide high quality data on atmospheric deposition, rural ground level ozone and other forms of atmospheric pollution;
- Support the primary and secondary ozone NAAQS and provide data on NAAQS compliance in rural areas;
- Monitor the status and trends in regional air quality and atmospheric deposition;
- Assess and report on geographic patterns and long-term, temporal trends in ambient air pollution and atmospheric deposition;
- Improve our understanding of PM and ozone formation;
- Validate and improve atmospheric models;
- Provide data for health-based research and epidemiology studies;
- Assess the effectiveness of EPA's emission reduction programs; and
- Support science and ecosystem studies.

CASTNET sites measure weekly average concentrations of sulfate (SO_4^{2-}), nitrate (NO_3^-), ammonium (NH_4^+), sulfur dioxide (SO_2), nitric acid (HNO_3), chloride (Cl^-) and the base cations (Na^+ , K^+ , Mg^{2+} and Ca^{2+}) using a 3-stage filter pack. In addition, each site may make ancillary measurements, including hourly ozone (O_3), hourly meteorology, ammonia (NH_3) gas using passive devices, and trace-level gases. Trace-level gas monitors include reactive oxidized nitrogen (NO_y), nitric oxide (NO), sulfur dioxide (SO_2) and carbon monoxide (CO). CASTNET O_3 , meteorological, and trace gas measurements follow the requirements in the Code of Federal Regulations (CFR) and EPA's Quality Assurance Handbook.

II. PURPOSE

The primary purpose of this task order is to prepare the 2016 Canada-United States Air Quality Agreement Progress Report. The Task Order Project Officer shall provide technical direction for performance of specific tasks under this task order.

III. CONTRACT LEVEL STATEMENT OF WORK REFERENCE

The tasks to be performed under this task order are consistent with the activities authorized in CLIN 22 of the contract's Statement of Work.

IV. TECHNICAL DIRECTION

1. Prepare a Technical Proposal & Cost Estimate

The Contractor shall prepare a Task Order Proposal in accordance with the terms and conditions of contract clauses B.2 entitled Fixed Rates for Services – Indefinite delivery/Indefinite quantity contract.

2. Prepare the 2016 Canada-United States Air Quality Agreement Progress Report.

The contractor shall provide 3 design concepts for cover page and style sheets for interior pages of report i.e., inside grids, for review by EPA. One cover design and inside grid to be selected for the 2016 report by EPA. Note that the EPA may request slight modifications to the selected cover design and inside grid. Previous version of the Report (2014) will be provided as an example. The Contractor shall prepare concepts, covers, and inside grids with similar appearance to the 2014 Report. The content of the 2016 report will be provided to the Contractor by EPA as a Word document including source data for graphs in Excel format) and tables, and accompanying text

Once a concept, cover, and inside grid have been selected by EPA, the Contractor shall prepare the 2016 report utilizing the data and text provided by EPA. The Contractor shall create the final graphics (charts and tables) for the 2016 Report from the data provided by EPA. The Contractor may use the EPA-provided graphics as a guide. The graphics created by the Contractor shall include the same data format and depiction as the graphics provided by EPA.

The Contractor shall research and identify photos (10-15) to include in the 2016 report for review by EPA. If necessary, revise photos selected and purchase photo rights, if required.

EPA has estimated 20 labor hours for contract alterations after the author reviews the draft and proofing to prepare the final Report. This cost shall only be charged if needed.

3. Travel to Meetings

None anticipated.

V. DELIVERABLES AND SCHEDULE

1. Proposal

The contractor shall deliver a Task Order Proposal in accordance with clause B.7 Task Order Ordering Procedures of the contract. The proposal shall be submitted 10 days after receipt of the SOW.

2. Monthly Progress Report

The contractor shall prepare and submit a monthly progress report by the 15th of each month summarizing the progress made, issues encountered or expected, work planned for the next reporting period and costs. These reports shall comply with contract clauses F.3 Reports of Work and F.5 Monthly Progress Report. Reports shall be delivered electronically.

3. Report

The 2014 Report will be provided as an example to the Contractor by EPA. The 2016 Report will be a shorter and more condensed version of the 2014 Report; page total of the 2016 Report will be determined upon approval of the concept, cover, and inside grid. The format of the Report shall be PDF. The Contractor will create a final high resolution PDF and transfer it to DVD. No hardcopies of the Report will be required. All (layered) source Adobe Photoshop CS4 files shall be provided to EPA. All fonts shall be provided to EPA.

Distribution of Deliverables:

Addressee	Copies
EPA Contracting Officer (Mike Fox)	1
EPA Project Officer (Melissa Puchalski)	1
EPA Alternate (Mark Evangelista)	1

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. 001		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO.	
6. PROJECT NO. (If applicable)		7. ADMINISTERED BY (If other than Item 6)		CODE	
4. ISSUED BY HPOD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460		8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) AMEC ENVIRONMENT & INFRASTRUCTURE, INC. Attn: LISA DWYER AMEC FOSTER WHEELER ENVIRONMENT & I 751 ARBOR WAY, STE 180 (b)(4) BLUE BELT PA 194221960		9A. AMENDMENT OF SOLICITATION NO. 9B. DATED (SEE ITEM 11) 10A. MODIFICATION OF CONTRACT/ORDER NO. EP-W-16-015 0011 10B. DATED (SEE ITEM 13) 12/19/2016	
CODE 038086125		FACILITY CODE			

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

1. The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

Net Decrease: -\$3,000.00

See Schedule

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)
X	FAR 52.232-22 Limitation of Funds

E. IMPORTANT: Contractor ☐ is not. ☒ is required to sign this document and return _____ 1 _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to deobligate funding in the amount of \$3,000.00 from this task order.

LIST OF CHANGES:

Reason for Modification : Funding Only Action

Obligated Amount for this Modification: -\$3,000.00

New Total Obligated Amount for this Award: \$4,933.00

CHANGES FOR LINE ITEM NUMBER: 1

Obligated Amount for this modification: -\$3,000.00

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10 A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) Kemp Howell - Project Manager		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Michael C. Fox	
15B. CONTRACT/ORDER NO. 181811	15C. DATE SIGNED 6-6-17	16B. UNITED STATES OF AMERICA Michael Fox	16C. DATE SIGNED 06/06/2017

NSN 7540-01-162-8070
Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED EP-W-16-015/0011/001	PAGE	OF
		2	2

NAME OF OFFEROR OR CONTRACTOR
AMEC ENVIRONMENT & INFRASTRUCTURE, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>CHANGES FOR ACCOUNTING CODE: 16-17-B-53G3-101A46-2505-1753GP7002-001 Amount changed from \$7,953.00 to \$4,953.00</p> <p>Delivery: 07/08/2017 Delivery Location Code: OAR/OAQPS/CORE OAR/OAQPS/CORE US Environmental Protection Agency Mail Code: C404-02 109 TW Alexander Drive Durham NC 27711 USA</p> <p>Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>FOB: Destination Period of Performance: 12/20/2016 to 07/08/2017</p>				

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED EP-W-16-015/0011/002	PAGE	OF
		2	2

NAME OF OFFEROR OR CONTRACTOR
AMEC ENVIRONMENT & INFRASTRUCTURE, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>CHANGES FOR LINE ITEM NUMBER: 1</p> <p>Obligated Amount for this modification: -\$3,408.03</p> <p>Incremental Funded Amount changed from \$4,953.00 to \$1,544.97</p> <p>CHANGES FOR ACCOUNTING CODE:</p> <p>16-17-B-53G3-101A46-2505-1753GP7002-001</p> <p>Amount changed from \$4,953.00 to \$1,544.97</p> <p>Payment:</p> <p>RTP Finance Center</p> <p>US Environmental Protection Agency</p> <p>RTP-Finance Center (AA216-01)</p> <p>109 TW Alexander Drive</p> <p>www2.epa.gov/financial/contracts</p> <p>Durham NC 27711</p> <p>FOB: Destination</p> <p>Period of Performance: 12/20/2016 to 07/08/2017</p>				

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS <small>OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30</small>				1. REQUISITION NUMBER PR-OAR-17-00582		PAGE OF 1 3	
2. CONTRACT NO. EP-W-16-015			3. AWARD EFFECTIVE DATE		4. ORDER NUMBER 0012		5. SOLICITATION NUMBER
7. FOR SOLICITATION INFORMATION CALL:			a. NAME Michael Fox		b. TELEPHONE NUMBER (No collect calls) 202-564-2550		8. SOLICITATION ISSUE DATE ET
9. ISSUED BY HPD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460			CODE HPD		10. THIS ACQUISITION IS <input checked="" type="checkbox"/> UNRESTRICTED OR <input type="checkbox"/> SET ASIDE W FOR:		
			<input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> HUBZONE SMALL BUSINESS <input type="checkbox"/> SERVICE-DISABLED VETERAN-OWNED SMALL BUSINESS		<input type="checkbox"/> WOMEN-OWNED SMALL BUSINESS <input type="checkbox"/> (WOSB) ELIGIBLE UNDER THE WOMEN-OWNED SMALL BUSINESS PROGRAM <input type="checkbox"/> EDWOSB <input type="checkbox"/> 8(A)		NAICS 541620 SIZE STANDARD: \$15.0
11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED <input type="checkbox"/> SEE SCHEDULE		12. DISCOUNT TERMS		13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)		13b. RATING	
15. DELIVER TO OAR/OAQPS/AQAD US Environmental Protection Agency Mail Code: C304-02 109 TW Alexander Drive Durham NC 27711		CODE OAR/OAQPS/AQAD		16. ADMINISTERED BY HPD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460		CODE HPD	
17a. CONTRACTOR/OFFEROR AMEC ENVIRONMENT & INFRASTRUCTURE, INC. Attn: LISA DWYER AMEC FOSTER WHEELER ENVIRONMENT & I 751 ARBOR WAY, STE 180 BLUE BELL PA 194221960		CODE 038086125 FACILITY CODE		18a. PAYMENT WILL BE MADE BY Multiple		CODE	
TELEPHONE NO. (b)(4)				18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK BELOW IS CHECKED <input type="checkbox"/> SEE ADDENDUM			
17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER							
19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES			21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	DUNS Number: 038086125 Task Order 12 - Characterization of Reduced Nitrogen at IMPROVE and CSN Monitoring Sites This task order is issued in accordance with the Task Order Ordering Procedures and hereby incorporates the base contract terms and conditions by reference. The period of performance of this task order is April 18, 2017 to July 8, 2017. (Use Reverse and/or Attach Additional Sheets as Necessary)						
25. ACCOUNTING AND APPROPRIATION DATA See schedule						26. TOTAL AWARD AMOUNT (For Govt. Use Only) \$65,565.00	
<input type="checkbox"/> 27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4. FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED. <input type="checkbox"/> 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED.							
<input checked="" type="checkbox"/> 28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN 1 COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED.				<input type="checkbox"/> 29. AWARD OF CONTRACT: _____ OFFER DATED _____. YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS: _____			
30a. SIGNATURE OF OFFEROR/CONTRACTOR 				31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER) Michael Fox			
30b. NAME AND TITLE OF SIGNER (Type or print) Kemp Howell - Project Manager			30c. DATE SIGNED 4/17/17	31b. NAME OF CONTRACTING OFFICER (Type or print) Michael C. Fox		31c. DATE SIGNED 04/17/2017	

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	<p>The Contractor shall perform in accordance with Attachment A - Statement of Work (6 pages) and the accepted technical proposal and cost estimate (12 pages) dated April 2017 in the amount of \$65,565.00.</p> <p>This is a Time-and-Materials (T&M) task order with a total ceiling price of \$65,565.00 which the Contractor is not authorized to exceed. The Contractor exceeds at its own risk.</p> <p>Contracting Officer: Michael Fox, (202)564-2550, Fox.Michael@epa.gov</p> <p>Contracting Officer's Representative (COR) for this task order: Melissa Puchalski, (202) 343-9882, puchalski.melissa@epa.gov</p> <p>Alternate COR: Gregory Beachley, (202)343-9621, Beachley.Gregory@epa.gov TOCOR: Melissa Puchalski Period of Performance: 04/18/2017 to 07/08/2017</p>				
0001	<p>Task Order 12; Characterization of Reduced Nitrogen at IMPROVE and CSN Monitoring Sites</p> <p>Accounting Info: Continued ...</p>				65,565.00

32a. QUANTITY IN COLUMN 21 HAS BEEN

☐ RECEIVED ☐ INSPECTED ☐ ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: _____

32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE		32c. DATE	32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE			32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
			32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
33. SHIP NUMBER	34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR	36. PAYMENT <input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	37. CHECK NUMBER
<input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL				
38. S/R ACCOUNT NUMBER	39. S/R VOUCHER NUMBER	40. PAID BY		
41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT			42a. RECEIVED BY (Print)	
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER			42b. RECEIVED AT (Location)	
			42c. DATE REC'D (YYMMDD)	42d. TOTAL CONTAINERS

CONTINUATION SHEET

REFERENCE NO. OF DOCUMENT BEING CONTINUED

EP-W-16-015/0012

PAGE OF

3

3

NAME OF OFFEROR OR CONTRACTOR

AMEC ENVIRONMENT & INFRASTRUCTURE, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	16-E1-53GS-102A04XPM-4183-1753PM7051-001 BFY: 16 Fund: E1 Budget Org: 53GS Program (PRC): 102A04XPM Budget (BOC): 4183 DCN - Line ID: 1753PM7051-001 Funding Flag: Partial Funded: \$2,162.75 Accounting Info: 17-E1-53GS-102A04XPM-4183-1753PM7051-002 BFY: 17 Fund: E1 Budget Org: 53GS Program (PRC): 102A04XPM Budget (BOC): 4183 DCN - Line ID: 1753PM7051-002 Funding Flag: Partial Funded: \$63,402.25 Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711 Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (D143-02) 109 TW Alexander Drive Durham NC 27711				

Title: Characterization of reduced nitrogen at IMPROVE and CSN monitoring sites
Contractor: Amec Foster Wheeler
Contract #: EP-W-16-015
Task Order #: 0012
Period of Performance: 3/10/2017 to 7/8/2017

EPA Key Personnel

Task Order Project Officer (TOPO)/Contract Level Project Officer (PO):

Melissa Puchalski
Clean Air Markets Division (OAP/OAR/CAMD)
1200 Pennsylvania Ave., NW
Mail Code 6204M
Washington, DC 20460
phone: (202) 343-9882
email: puchalski.melissa@epa.gov

Alternate TOPO:

Gregory Beachley
Clean Air Markets Division (OAP/OAR/CAMD)
1200 Pennsylvania Ave., NW
Mail Code 6204M
Washington, DC 20460
phone: (202) 343-9621
email: Beachley.gregory@epa.gov

Contracting Officer (CO):

Michael Fox
Contracting Officer
Administrative Contract Service Center
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STATEMENT OF WORK

I. INTRODUCTION

The Clean Air Status and Trends Network (CASTNET) is a long-term environmental monitoring network that measures changes in ambient air quality and assesses atmospheric deposition over broad geographic regions of the U.S. (<https://www.epa.gov/castnet>). Operating since 1987, CASTNET has evolved into a robust regional monitoring program which currently consists of approximately 95 monitoring stations nationwide. The Environmental Protection Agency (EPA) coordinates the operation of the network in cooperation with numerous federal, tribal, state and local partners.

The primary monitoring objectives of CASTNET are to:

- Provide high quality data on atmospheric deposition, rural ground level ozone and other forms of atmospheric pollution;
- Support the primary and secondary ozone National Ambient Air Quality Standards (NAAQS) and provide data on NAAQS compliance in rural areas;
- Monitor the status and trends in regional air quality and atmospheric deposition;
- Assess and report on geographic patterns and long-term, temporal trends in ambient air pollution and atmospheric deposition;
- Improve our understanding of Particulate Matter (PM) and ozone formation;
- Validate and improve atmospheric models;
- Provide data for health-based research and epidemiology studies;
- Assess the effectiveness of EPA's emission reduction programs; and
- Support science and ecosystem studies.

CASTNET sites measure weekly average concentrations of sulfate (SO_4^{2-}), nitrate (NO_3^-), ammonium (NH_4^+), sulfur dioxide (SO_2), nitric acid (HNO_3), chloride (Cl^-) and the base cations (Na^+ , K^+ , Mg^{2+} and Ca^{2+}) using a 3-stage filter pack. In addition, each site may make ancillary measurements, including hourly ozone (O_3), hourly meteorology, ammonia (NH_3) gas using passive devices, and trace-level gases. Trace-level gas monitors include reactive oxidized nitrogen (NO_y), nitric oxide (NO), sulfur dioxide (SO_2) and carbon monoxide (CO). CASTNET O_3 , meteorological, and trace gas measurements follow the requirements in the Code of Federal Regulations (CFR) and EPA's Quality Assurance Handbook.

II. Background

The Interagency Monitoring of Protected Visual Environments (IMPROVE) and Chemical Speciation (CSN) networks have provided two decades of routine particulate matter speciation data that support regional haze and PM NAAQS programs. The Clean Air Status and Trends Network (CASTNET) and National Atmospheric Deposition Program (NADP) have provide routine measurements of particulate, gaseous and wet deposition to support acid deposition programs. Over this period the chemical composition of the ambient atmosphere has changed markedly from one dominated by nitrate, sulfate and carbonaceous aerosols, and their associated precursor gases (NO_x , SO_x , VOCs, SVOCs), to an atmospheric mixture that includes a significant amount of reduced inorganic nitrogen – particulate ammonium (NH_4^+) and its precursor gas, ammonia (NH_3). The magnitude of this change is reflected by a nationwide shift in the atmospheric nitrogen budget from one dominated by inorganic oxidized compounds, to one where reduced inorganic nitrogen species ($\text{NH}_x = \text{NH}_3 + \text{NH}_4^+$) now have similar or greater concentrations. Total atmospheric nitrogen compounds are still primarily in inorganic forms, but have significant contributions from organically bound nitrogen (both reduced and oxidized

forms). Looking forward, the shift to larger relative contributions of atmospheric reduced inorganic nitrogen is projected to continue as existing rules and technologies continue to decrease NO_x emissions from the transportation and energy generation sectors with an expected modest increase in NH₃ emissions. As the atmospheric emissions and composition evolve in response to rules, our networks must evolve to best inform decision makers to address such questions as:

1. What atmospheric species and emission sources contribute to PM, regional haze and nitrogen deposition?
2. What options in emissions reductions are available to reduce PM, regional haze and nitrogen deposition?

To answer these questions, it becomes necessary to characterize reduced nitrogen emission sources and atmospheric composition. Our networks are relatively well positioned to characterize inorganic oxides of nitrogen, but poorly positioned to characterize the increasingly dominant reduced component of atmospheric nitrogen. This severe limitation is affecting our ability to understand and mitigate the causes of excess PM, haze and nitrogen deposition, in which reduced nitrogen compounds are playing an increasingly important role.

III. PURPOSE

The primary purpose of this task order is to characterize reduced nitrogen ($\text{NH}_x = \text{NH}_3 + \text{NH}_4^+$) using existing network methodologies as a cost-effective, efficient way to characterize a significant contributor to PM formation, visibility degradation, and total nitrogen deposition. This study is a follow-on to the study performed by Chen et. al. (2014) in the western United States. This study will demonstrate if acid-impregnated filters within the IMPROVE module and the CSN Super Speciation Air Sampling System (SASS) can provide accurate NH_x concentrations in humid climates with low to moderate ambient NH_3 concentrations (Duke Forest, North Carolina and Gainesville, Florida) for approximately six months. The 1:3 sample schedule will be maintained for the CSN and IMPROVE samplers while a URG Annular Denuder System (ADS) will be used as a reference method on the same 1:3 day schedule at the two locations.

Objectives of the study:

- Test the NH_x monitoring method in hot and humid environments with low to moderate NH_3 concentrations.
- Assess sources of uncertainty in the measurement
- Develop standard sampling protocols that can be employed in a routine network.

IV. CONTRACT LEVEL STATEMENT OF WORK REFERENCE

The tasks to be performed under this task order are consistent with the activities authorized in CLIN 22 of the contract's Statement of Work.

V. TECHNICAL DIRECTION

1. Prepare a Technical Proposal & Cost Estimate

The Contractor shall prepare a Task Order Proposal in accordance with the terms and conditions of contract clauses B.2 entitled Fixed Rates for Services – Indefinite delivery/Indefinite quantity contract.

2. Install and Calibrate Measurement Systems

The Contractor shall install a CSN Super SASS sampler, an IMPROVE sampler, a URG ADS sampling system and an Ammonia Monitoring Network (AMoN) sampler at their Gainesville facility. The CSN and IMPROVE

sampling systems will be provided by EPA. The AMoN shelter and samples will be provided and analyzed by NADP.

The IMPROVE system will consist of a 6ft inlet with a PM_{2.5} cyclone. There will be one module used on the IMPROVE sampler for measuring NH_x. The module will include a phosphorous-acid (H₃PO₃)-impregnated cellulose filter (37 mm) to capture NH_x. The IMPROVE sampler operates with a flow rate of 22.8 Liters per minute (L/min) at local temperature and pressure. Flow rate and temperature are recorded every 15 minutes.

The CSN Super SASS sampler will consist of 2 channels including a magnesium oxide (MgO)-coated denuder followed by a nylon filter and a second channel with a H₃PO₃-impregnated cellulose filter (47 mm). Each channel shall be set to a flow rate of 6.7 L/min. The contractor shall follow the setup and operational procedures described in the SOP for the MetOne Super SASS (<https://www3.epa.gov/ttnamti1/files/spectraining/MetOneSASSFOM.pdf>).

The URG ADS denuder/filter pack system shall include a PM_{2.5} cyclone, a sodium carbonate (Na₂CO₃) denuder to remove HNO₃ followed by H₃PO₃-coated denuder, a nylon filter, and a back-up H₃PO₃-coated denuder to capture any volatilized NH₃. The acid-coated denuders shall be coated and extracted following EPA's method found here: <https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/RTIDenudersCaptureAmmFINAL.pdf>. The flow rate shall be set to 16.7 L/min. Duplicate denuder systems may be run to estimate precision of the reference sampler.

The Contractor shall calibrate the flow system for the SASS, IMPROVE and URG sampling systems prior to study, once during the 6-month sampling period (i.e. after 3-months), and at the completion of the study. Routine monthly leak checks shall be performed on each sampling system.

3. Preparing and Extracting Samples

The contractor shall prepare H₃PO₃-impregnated filters (37 mm cellulose and 47 mm cellulose) for the Duke Forest and Gainesville sites following the protocols described in Chen et. al. (2014). Following sample collection, the impregnated cellulose filters shall be extracted with deionized (DI) water according to the standard IMPROVE method at: <http://vista.cira.colostate.edu/Improve/wp-content/uploads/2016/07/IMPROVE-Anion-Cation-Analysis-by-Ion-Chromatography-SOP-2016.pdf>

The MgO denuders will be provided by EPA. The contractor shall coat the MgO honeycomb denuders following the SOP provided, but not extract them. The MgO denuder shall be cleaned and recoated after 3 months. The MgO denuder SOP can be found here: <https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/RTIMgOHoneycombDenuderSOP.pdf>

The contractor shall prepare 3 denuders for the ADS (one Na₂CO₃ and two H₃PO₃-coated denuders). The two (H₃PO₃)-coated denuders will be extracted. The contractor shall extract the URG ADS denuders and H₃PO₃-impregnated filters using the recommendations described in EPA's Compendium of Methods for Inorganic Air Pollutants IO-4.2 (<https://www3.epa.gov/ttn/amtic/files/ambient/inorganic/mthd-4-2.pdf>). The H₃PO₃ denuders shall be extracted with DI water. The Na₂CO₃-coated denuder shall be cleaned and recoated monthly.

The nylon filter from the CSN SuperSASS shall be extracted for particulate NH₄⁺ using the procedure described in the CSN SOP located here: <https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/pm25cationsop.pdf>.

All extracts should be stored under refrigeration until the analysis is performed.

Laboratory and field blanks shall be prepared and analyzed routinely as described in Table 1 below.

4. Sample Analysis

The contractor shall analyze the cellulose filter extracts and denuder extracts from the Gainesville and Duke Forest sites by IC. The Duke Forest operator will ship the denuder and filter extracts to the contractor's facility.

The contractor shall analyze the extracts using the method described in the SOP for PM_{2.5} Cation Analysis found here: <https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/pm25cationsop.pdf>.

Laboratory analysis results shall be converted to concentrations using the total sample volume recorded in a database.

Table 1

Network/Sampler	Channels	Schedule	Laboratory Blank	Field Blank
CSN/SuperSASS	Channel 1: H ₃ PO ₃ filter (47 mm)	1:3 day sampling	Weekly	Monthly
	Channel 2: MgO denuder, 47 mm nylon filter	1:3 day sampling	Weekly (filter only)	Weekly (filter only)
IMPROVE Sampler	Channel B modified: H ₃ PO ₃ filter (37 mm)	1:3 day sampling	Weekly	Monthly
URG	H ₃ PO ₃ Acid denuder (2)	1:3 day sampling	Weekly	Monthly
	Nylon Filter (47 mm)	1:3 day sampling	Weekly	Weekly
	Na ₂ CO ₃ denuder		None	None

VI. DELIVERABLES AND SCHEDULE

1. Proposal

The contractor shall deliver a Task Order Proposal in accordance with clause B.7 Task Order Ordering Procedures of the contract. The proposal shall be submitted 10 days after receipt of the SOW.

2. Monthly Progress Report

The contractor shall prepare and submit a monthly progress report by the 15th of each month summarizing the progress made, issues encountered or expected, work planned for the next reporting period and costs. These reports shall comply with contract clauses F.3 Reports of Work and F.5 Monthly Progress Report. Reports shall be delivered electronically.

3. Database

The contractor shall deliver a database submittal with valid data and all QA/QC data reported during the field campaign. Results from the previous 30-day period shall be submitted no later than 30 days after the last sample of the month was taken. The database shall be delivered on the last day of the month.

Distribution of Deliverables:

Addressee	Copies
EPA Contracting Officer (Mike Fox)	1
EPA Project Officer (Melissa Puchalski)	1
EPA Alternate (Gregory Beachley)	1
EPA Technical Advisor (John T Walker)	1
EPA Technical Advisor (Joann Rice)	1
EPA Technical Advisor (Rich Scheffe)	1

VII. References

Chen, X., Day, D., Schichtel, B., Malm, W., Matzoll, A.K., Mojica, J., McDade, C.E., Hardison, E.D., Hardison, D.L., Walters, S., Van De Water, M., and Collett Jr., J.L. (2014) Seasonal ambient ammonia and ammonium concentrations in a pilot IMPROVE NH_x monitoring network in the western United States. *Atmos. Envir.* 91, 118-126.

RTI International, Standard Operating Procedures for Determination of Anions and/or Cations Extracted from Nylon Filters by Ion Chromatography (IC), Rev. 5. Mar. 3, 2016 (<http://vista.cira.colostate.edu/Improve/wp-content/uploads/2016/07/IMPROVE-Anion-Cation-Analysis-by-Ion-Chromatography-SOP-2016.pdf>).

RTI International, Standard Operating Procedure for Coating and Extracting Denuders for Capture of Ammonia and Its Measurement, Rev. 0. Feb. 14, 2008 (<https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/RTIDenudersCaptureAmmFINAL.pdf>).

RTI International, Standard Operating Procedures for Coating Aluminum Honeycomb Denuders with Magnesium Oxide, Rev. 4. Feb. 17, 2009 (<https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/RTIMgOHoneycombDenuderSOP.pdf>).

RTI International, Standard Operating Procedure for PM_{2.5} Cation Analysis, Rev. 7. Aug. 25, 2009 (<https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/pm25cationsop.pdf>).

US EPA, Model SASSTM & SuperSASSTM PM_{2.5} Ambient Chemical Speciation Samplers: Field Operation Manual, Doc. #SASS-9800 Rev. G. Dec. 27, 2001 (<https://www3.epa.gov/ttnamti1/files/spectraining/MetOneSASSFOM.pdf>).

US EPA, Compendium Method IO-4.2: Determination of Reactive Acidic and Basic Gases and Strong Acidity of Atmospheric Fine Particles (< 2.5 μ m). Jun. 1999 (<https://www3.epa.gov/ttn/amtic/files/ambient/inorganic/mthd-4-2.pdf>).

NAME OF OFFEROR OR CONTRACTOR
 AMEC ENVIRONMENT & INFRASTRUCTURE, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Obligated Amount for this modification: -\$40,000.00 Incremental Funded Amount changed from \$0.00 to \$25,565.00 CHANGES FOR ACCOUNTING CODE: 17-E1-53GS-102A04XPM-4183-1753PM7051-002 Amount changed from \$63,402.25 to \$23,402.25 Percent changed from 96.70137 to 0 FOB: Destination Period of Performance: 04/18/2017 to 07/08/2017				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. 002		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
6. ISSUED BY HPOD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460		CODE HPOD		7. ADMINISTERED BY (If other than Item 6) 		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) AMEC ENVIRONMENT & INFRASTRUCTURE, INC. Attn: LISA DWYER AMEC FOSTER WHEELER ENVIRONMENT & I 751 ARBOR WAY, STE 180 (b)(4) BLUE BELL PA 194221960 CODE 038086125 FACILITY CODE				(x)		9A. AMENDMENT OF SOLICITATION NO.	
						9B. DATED (SEE ITEM 11)	
				x		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-W-16-015 0012	
						10B. DATED (SEE ITEM 13) 04/18/2017	
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required) See Schedule				Net Decrease:		-\$5,350.21	
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
CHECK ONE		A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.					
		B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).					
		C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:					
X		D. OTHER (Specify type of modification and authority) FAR 52.232-22 Limitation of Funds					
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not. <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 038086125							
TOCOR: Melissa Puchalski							
LIST OF CHANGES:							
Reason for Modification : Funding Only Action							
Obligated Amount for this Modification: -\$5,350.21							
New Total Obligated Amount for this Award: \$20,214.79							
Incremental Funded Amount changed: from \$25,565.00 to \$20,214.79							
CHANGES FOR LINE ITEM NUMBER: 1							
Obligated Amount for this modification: -\$5,350.21							
Incremental Funded Amount changed from \$25,565.00 to \$20,214.79							
Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Michael C. Fox			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
(Signature of person authorized to sign)				 ELECTRONIC SIGNATURE (Signature of Contracting Officer)		09/13/2017	

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/0012/002	2	2

NAME OF OFFEROR OR CONTRACTOR

AMEC ENVIRONMENT & INFRASTRUCTURE, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>CHANGES FOR ACCOUNTING CODE: 17-E1-53GS-102A04XPM-4183-1753PM7051-002 Amount changed from \$23,402.25 to \$18,052.04</p> <p>FOB: Destination Period of Performance: 04/18/2017 to 07/08/2017</p>				